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ABSTRACT

Digitisation has opened up powerful new ways for multinational enterprises (MNEs) to connect with global markets, resources and partners and to pursue innovation in foreign markets. While the unique characteristics of digital technologies and digital assets embody an expansive and promising global landscape for innovation, MNEs' success in pursuing such digital innovation will also be shaped by the nature and extent of localization forces prevalent in different foreign markets, an issue that has received limited attention in both digital innovation and international business literatures. In this short essay, I highlight this gap and call for the study of digital innovation in the international business context by bringing together ideas, theories and concepts from both areas. I draw on and combine two perspectives—one drawn from the innovation literature (digital innovation as recombinant innovation involving digital assets) and the other from the international business literature (the international business context as being defined by national policies and regulations, infrastructure and culture) and suggest several promising themes and questions for future research in this area, specifically relating to how globalization/localization forces facilitate/hinder MNEs' global digital innovation efforts. I hope the call made here will be answered by scholars from both fields and lead to insights that enrich both theory and practice related to MNE innovation in today's rapidly growing digital economy.

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Introduction

As the infusion of digital technologies in innovation processes and outcomes continues unabated across industries (Nambisan et al., 2020), the contexts for such digital innovation are increasingly crossing national and regional boundaries. Indeed, many of the dominant firms in the digital economy today are multinational enterprises (MNEs) and digital born globals that generate innovation in one part of the world and market it in other parts of the world. While the extant literature on digital innovation has focused on firm-level and ecosystem-level strategies and practices, there has been limited focus on the international business (IB) context in which such innovation frequently unfolds. Further, as several recent events, including Brexit, the ongoing US-China trade conflict, and the COVID-19 pandemic have shown, our assumptions regarding a barrier-free, globalised world as the context for digital innovation are increasingly being questioned; indeed, localisation forces that include nationalism, protectionist trade measures/

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practices, and digital sovereignty concerns have come to the forefront potentially thwarting global digital innovation initiatives. As such, there is critical need to contextualise and adopt an international business perspective in studies on digital innovation.

It is well established that multinational enterprises serve as an important vehicle for the generation and diffusion of innovation – new technologies, knowledge as well as products/services – across the world. Along with the role that MNEs' play in global innovation, the overarching perspectives and associated factors that shape their global innovation initiatives have also evolved over the years. Prior to the 1980s, studies in international business in this area, by and large, assumed that MNEs innovate in their home country and focus on exploiting their superior technological assets by merely adapting the technologies to fit foreign markets (e.g., Behrman & Fischer, 1980; Caves, 1982; Ronstadt, 1978). In other words, the focus was on understanding the demand-side determinants of overseas R&D and the tensions between such cross-border asset exploitation and appropriability concerns. This view was later modified to incorporate the opportunity for MNEs to augment (as opposed to merely exploit) their technological assets by co-locating their R&D functions in foreign countries (e.g., Cantwell, 1989; Howells, 1990; Niosi, 1999). Such asset-seeking strategies thus involved adopting a supply-side perspective of the determinants of knowledge sourcing, i.e., understanding how MNEs' R&D localisation choices shape their innovative capacity (e.g., Dunning & Narula, 1995; Florida, 1997; Odagiri & Yasuda, 1996).

By the 2000s, a more complex and network-oriented view of MNE innovation took hold in IB studies that gave credence to the multitude of actors (both within and across the boundaries of MNEs) who contribute to such innovation efforts and the role of location-specific factors in R&D internationalisation (e.g., Buckley & Strange, 2015; Castellani & Zanfei, 2006; Lema et al., 2015; Mudambi, 2008; Zanfei, 2000). Such a perspective of global innovation has also led to acknowledging the role of MNEs (and their subsidiaries) from emerging economies in innovation as well as the potential for innovation/knowledge flows in both directions – from advanced economies to developing economies and in the reverse direction (e.g., D'Agostino & Santangelo, 2012; Govindarajan & Ramamurti, 2011; Von Zedtwitz et al., 2015). However, despite the adoption of such a contemporary view of innovation – one that incorporates a global ecosystem or network perspective and the role of firms in both established and emerging economies – IB research has, until recently, placed limited focus on digital technologies and digital assets that increasingly form the primary ingredient for innovation (notable exceptions include Banalieva & Dhanaraj, 2019; Li et al., 2019; Monaghan et al., 2020; Nambisan et al., 2019; Shaheer & Li, 2020; Stallkamp & Schotter, 2020). Admittedly, digitisation is a relatively new phenomenon in international business, and as such, the lack of attention to the nature and role of digital assets is understandable. However, as digital assets assume greater significance in driving innovation across industries, it will be critical to incorporate such a digital technology perspective in studies on MNE innovation.

This essay sets out the call for the *study of digital innovation in the international business context* by bringing together ideas, theories and concepts from both areas to inform on how digital innovations unfold in globalised and localised IB environments. To keep the discussion within limits, I adopt and frame the discussion within two perspectives – one drawn from the innovation literature and the other from the IB literature.

The first perspective considers digital innovation as recombinant innovation, i.e., as the process and outcomes of reconfiguring and recombining digital assets. Such a perspective allows for viewing digital assets as non-location-bound firm-specific advantages (FSAs) (Rugman & Verbeke, 2001, 1992) that MNEs can further develop or augment by combining with complementary partners' FSAs (that may be location-bound) to cater to specific foreign markets. As such, it aligns well with the new internalisation perspective (e.g., Buckley, 2009; Hennart, 2009; Rugman & Verbeke, 1992, 2003; Verbeke & Kano, 2015, 2016) that emphasises the significance of the complementary assets of foreign entities in enabling MNEs to exploit their FSAs through novel resource combinations. Such a perspective also aligns well with the business ecosystem focus as the locus of MNE innovation and value creation, i.e., the sharing of digital assets and their recombination occurs within the context of the MNE's ecosystem (Nambisan et al., 2019).

The second perspective conceptualises the IB context in terms of three key elements or dimensions – government policies and regulations, infrastructure, and culture – that together define the compounded distance between home and host environments (Rugman et al., 2011). This allows us to bring more clarity to the key determinants of the nature and extent of globalisation and localisation forces prevalent in a foreign market, and thereby, to their role in moderating MNEs' digital innovation initiatives.

The combination of these two perspectives – i.e., digital innovation as recombinant innovation involving digital assets and the IB context as being defined by policies/regulations, infrastructure and culture – suggests several possible themes and questions for future research in this area, specifically relating to how globalisation/localisation forces facilitate/hinder MNEs' global innovation efforts.

MNE innovation as recombinant innovation of digital assets

The perspective of innovation as recombination of existing ideas/technologies has Schumpeterian roots (Langlois, 2007; Weitzman, 1998) and has informed much of the technological innovation literature (e.g., Galunic & Rodan, 1998; Henderson & Clark, 1990; Sanchez & Mahoney, 1996). Such a perspective of innovation is also consistent with the service dominant logic which views innovation as a process of resource integration (Lusch & Nambisan, 2015). Digitisation of products, services, processes and business models further enhances the relevance and value of such a perspective in understanding contemporary global innovation contexts.

As has been noted in the digital innovation literature, digital assets or artefacts are open, editable, malleable, reprogrammable and reconfigurable (Kallinikos et al., 2013; Yoo et al., 2010), all of which make them highly amenable for recombinant innovation. Further, the layered modular nature of digital technology architecture – which represents the hybrid of the modular architecture of a physical product and the layered architecture of digital technology (Yoo et al., 2010) – implies the product-agnostic characteristic of digital assets (i.e., their usage or deployment is not fixed to a certain type of product or device) and allows for their integration or recombination with newer digital technologies or assets belonging to different layers. It should also be pointed out that while the inherent characteristics of digital assets – for example, their openness and affordances – facilitate such asset recombination, their function and value are shaped by their relation

to other digital assets in the form of value paths (Henfridsson et al., 2018). Thus, a digital asset can be part of different recombinations (or multiple value paths) assuming different functions and contributing different types of value, embodying the underlying generativity (Yoo et al., 2010).

Importantly, the use of digital artefacts is not limited or confined by geographical and institutional boundaries (i.e., they exhibit distributedness – Kallinikos et al., 2013), and instead is dependent only on their compatibility with and access to digital technologies and infrastructures. Thus, digital infrastructures (that follow global standards) render digital artefacts location or country-agnostic. All of these characteristics of digital assets promote world-wide or boundaryless recombinant innovation by MNEs.

Popular examples of digital innovation in both consumer and business -facing markets attest to all this and involve recombining existing digital components and technologies in different ways to achieve novel value propositions to service different foreign markets. For example, the success of DJI, the Chinese drone manufacturer, has less to do with its internal R&D capability and more to do with its ability to seek out and recombine existing digital technologies – in aerial imaging, autopilot, camera stabilisation, remote control, data storage and transmission, GPS, vision sensor, and videography – in novel ways to cater to different market segments (consumers/hobbyists, professionals and enterprises) in different geographical regions. Similarly, the success of Ola, the Indian ride sharing company, in expanding to foreign markets such as UK and Australia can be attributed, partly at least, to its ability to rapidly combine key elements of its digital platform with foreign partners' assets (e.g., digital payment systems). Importantly, the nature or form of such digital asset recombination may range from 'plug-and-play' enabled by adherence to interoperability standards and use of APIs to the modification and integration of digital components and assets available in the open source domain.

As noted, from an MNE perspective, digital assets imply non-location-bound FSAs that can be augmented by assets from partners in different foreign markets. The innovation process can thus be conceptualised as one wherein MNEs seek out digital assets from various partners and explore the possibilities for combining them with their FSAs to fashion value propositions that fit specific foreign market needs. Such recombination may be predicated on different governance approaches that vary on the extent of formal mechanisms employed. For example, Verbeke and Kano (2016) identify four types of resource recombination arrangements – fast bundling, principles-driven bunding, adaptive bundling, and entrepreneurial orchestration. However, the choice and efficacy of these different recombination arrangements are predicated not only on the characteristics of the resources (here, for example, the openness and affordances of digital assets) but importantly also on the characteristics of the host country context where the recombination occurs, or more specifically, on the compounded distance vis-a`-vis the home environment.

Compounded distance refers to the combined effect on spatial transaction costs of institutional, economic, cultural and geographic differences between home and host environments (Rugman et al., 2011). In general, the higher the compounded distance, the more challenging the resource recombination efforts in the foreign market would be. For example, in the absence of relevant information, MNEs may overestimate or misinterpret the value creation potential of and/or the ease of augmenting their digital FSAs in foreign markets, thereby enhancing bounded rationality challenges (Verbeke & Kano,

2016). Similarly, compounded distance may also lead to divergences between what foreign partners have promised in terms of deliverables and what their identity or values-driven routines and practices allow them to realise, thereby implying bounded reliability challenges (Kano & Verbeke, 2015).

In other words, the contingent nature of the relationships between different digital assets and their value creation potential will also be shaped by the characteristics of the foreign market context. Thus, while the recombination perspective of digital innovation has so far largely been built on the product agnostic nature of digital assets, lack of focus on the international business context could lead to a technology-centric view of MNE innovation that limits its potential to inform MNE global innovation strategies. To remedy this, next, I suggest some promising research themes and questions that bring together ideas and concepts that reflect both the technological aspects of digital assets and the foreign market contextual aspects, specifically globalisation/localisation forces.

Role of globalisation and localisation forces on MNE digital innovation

In many parts of the world, globalisation forces are on the retreat, and regional and nationalistic concerns – that portray localisation forces – are ascendant forcing MNEs to recalibrate their strategies and practices. From the perspective of MNEs' digital innovation efforts, we can view such localisation forces along three key dimensions: government policies and regulations, infrastructure, and culture. The greater the disparity in each of these dimensions between the MNEs' home environment and the foreign market, the greater the extent of localisation.

The nature and extent of such localisation forces may vary not only from country to country but also within a country over time. Importantly, while some of these localisation forces (e.g., trade barriers) may apply equally well to both digital and non-digital (physical) products/services, others (e.g., national security concerns, citizen privacy issues) gain particular relevance in the digital innovation context. To the extent such localisation forces diminish or invalidate the assumptions that underlie digital asset recombination, MNEs' innovation initiatives are likely to get affected. A careful consideration of each of these dimensions, in conjunction with relevant digital technology characteristics, raises several promising directions for future research at the intersection of digital innovation and international business.

Consider the influence of government policies and regulations related to intellectual property rights (IPR) protection. There is clear evidence in the IB literature regarding the critical role that IPR laws and policies play in shaping MNE innovation activity in foreign markets. For example, it has been shown that disparities in IPR regimes could hamper reverse innovation flows (Rosenbusch et al., 2019; Xie & Li, 2018), and more broadly, MNE efforts in sourcing innovation from foreign markets. Can digital FSAs be copied more easily by foreign economic actors, and if so, are the cross-border appropriability hazards enhanced (Banalieva & Dhanaraj, 2019)? Or, do unique aspects or characteristics of digital assets (e.g., modularity) allow for MNEs to pursue recombinant digital innovation even in contexts where IP regimes are deemed less favorable? What are there digital strategies and practices that could help MNEs overcome such deficiencies in IPR protection in foreign markets?

Another important set of government regulations and policies relates to data privacy and security. Different countries have adopted different policies related to the generation, storage and use of data – especially, in industries such as health, retail and banking. Some of these policies explicitly restrict cross-border movement of some types of business data (e.g., Australia's Personally Controlled EHR laws; Russian data localisation requirements). With data (both business-facing and consumer-facing) becoming a critical ingredient in innovation, such restrictions on cross-border data flows could have an important bearing on MNEs' innovation efforts in foreign markets. Further, as the nature and scope of such regulations vary from country to country, MNEs would likely find it challenging to deploy consistent digital innovation strategies. At the same time, digital technology characteristics and capabilities may help MNEs address some of these challenges. For example, many companies have adopted strategies that involve pushing their AI-based algorithms to the edges of their IoT networks (e.g., 'edge-of-things' computing) that fuel innovation and experimentation in foreign markets. More broadly, studies that focus on examining the challenges related to disparities in data policies and their impact on MNEs' efforts in digital innovation may prove to be very valuable.

Similarly, disparities in the nature of both digital and business infrastructures (between the home and host countries) may also affect MNEs' digital innovation efforts. The non-location-bound aspect of digital FSAs are dependent on the quality and nature of the digital infrastructure present in a foreign market. In recent years, several countries have cited digital sovereignty concerns (Mueller, 2017; Pinto, 2018) and moved towards 'walling' of some parts of their country-wide digital networks, raising the potential for the emergence of 'splinternet'. How would such national and regional digital infrastructure policies limit MNEs' ability to move and deploy their digital FSAs in foreign markets? What type of digital innovation strategies would be needed to overcome such challenges? These are all questions worth addressing.

Cultural differences could also critically shape MNEs' success in digital innovation in foreign markets. For example, generativity of digital technologies has been noted as an important driver of digital innovation. Yet, MNEs leading digital platforms are likely to exercise different types of control to align such generativity-induced innovation with their goals. Recent studies in digital innovation have focused on the resulting tensions between control and generativity (Svahn et al., 2017; Wareham et al., 2014). However, both of these are likely to dependent on the prevalent business culture in a foreign market and could moderate the success of MNEs' strategies to promote generativity and/or exercise control. When MNEs' assumptions regarding such culture are at variance with reality in a foreign market, their innovation strategies are likely to be less successful.

Increasingly, MNEs' digital innovation efforts include their consumers too. As social media becomes a powerful vehicle for company-consumer communication, one set of consumers – influencers – have assumed an important role in co-creating value with companies, especially in digital marketing innovation (e.g., Backaler, 2018). Such influencers combine their personal resources (e.g., social media following) with company resources to co-create value. Several MNEs – in both B2C and B2B markets – have engaged with influencers across the world in innovation. Importantly, the success of such innovation efforts will be dependent on the prevailing consumer culture in the foreign market. As the local consumer culture in a foreign market departs from the global

consumer culture (e.g., Steenkamp, 2019), MNEs will need to rethink their digital innovation strategies involving consumer innovators such as influencers. Thus, issues related to the impact of consumer culture also pose important questions for future research on digital innovation.

As noted previously, the relevance of the above localisation forces may vary with the extent of digitisation of the MNE's offerings and business model/operations. For example, while some offerings may be fully digital (e.g., TikTok, Zoom), others may involve a combination of physical and digital components (e.g., Nike 'smart' shoes, Samsung Family Hub smart refrigerator). Similarly, MNE's foreign operations may also be fully digital (e.g., 'lights out' factories) or partly digital (e.g., physical and online retail outlets). Future research may examine how the severity of the above issues vary with the nature and extent of digitisation of an industry/market.

Conclusion

Digitisation has opened up powerful new ways for MNEs to connect with global markets, resources and partners and to pursue innovation and value creation in foreign markets. While the unique characteristics of digital technologies and digital assets do embody an expansive and promising global landscape for innovation, MNEs' success in navigating this landscape will be dependent on the characteristics of the foreign market context, an issue that has received limited attention in both the digital innovation and the IB literatures. The purpose of this essay has been to highlight this gap and to offer some suggestions for advancing research in this direction.

The research issues and questions offered here are indicative of the richness and diversity of this research area. While, here, I adopted the recombinant innovation perspective, there may be other theoretical perspectives (e.g., learning, network, open innovation) that may help reveal additional research issues and questions. I hope the call made here to study issues at the intersection of digital innovation and IB will be answered by scholars from both fields and lead to insights that enrich both theory and practice related to MNE innovation in today's rapidly growing digital economy.

Disclosure statement

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